WHAT WE CLAIM IS:

1. A synthetic molecule of formula I:

A-B-E-D (I)

wherein A represents R_1 or a glyceride group having the formula Ia or Ib:

(Ia) (Ib)

wherein R is H or a linear or branched alkyl of up to 40 carbon atoms; R_1 and R_2 are independently H, alkyl or acyl and wherein the alkyl or acyl groups are linear or branched having up to 40 carbon atoms;

B is selected from the group comprising phosphate, phosphonate, sulfonate, carbamate, and phosphothionate;

E comprises a spacer or linker group providing a linkage between groups B and D and is selected from -cyclohexyl-; and $-CHR_3-CHR_4-$ wherein R_3 and R_4 are independently H, CH_2OH, CH_2-, or $(CH(OH))_m-CH_2OH$ or

$CH((CHOH)_mCH_2OH)$-; and wherein m=1 to 6;

D comprises at least one sugar moiety selected from the group comprising D-mannose, D-galactose, D-glucose, D-glucosamine, N-acetylglucosamine, and 6-deoxy-L-mannose, wherein when D is more than one sugar moiety, the sugar moiety may comprise a single chain of the same or different sugar moieties, or may comprise two or more separate sugar moieties or chains of sugar moieties attached to E at different sites;

with the proviso that when A is a diacyl or monacyl glyceride, R_3 and R_4 cannot both be H; and with the proviso that when R_3 is H, R_4 cannot be CH_2OH.

2. A synthetic molecule as claimed in claim 1, wherein R is a linear or branched alkyl of between 6 and 22 carbon atoms.

3. A synthetic molecule as claimed in claim 2, wherein R is a linear or branched alkyl of between 10 and 20 carbon atoms.

4. A synthetic molecule as claimed in claim 3, wherein R is a linear or branched alkyl of between 16 and 20 carbon atoms.

5. A synthetic molecule as claimed in any one of claims 1-4, wherein the alkyl or acyl groups of R_1 and R_2 are linear or branched having between 6 and 22 carbon atoms.

6. A synthetic molecule as claimed in claim 5, wherein the alkyl or acyl group s of R_1 and R_2 are linear or branched having between 10 and 20 carbon atoms.

7. A synthetic molecule as claimed in claim 6, wherein the alkyl or acyl groups of R_1 and R_2 are linear or branched having between 16 and 20 carbon atoms.

8. A synthetic molecule according to claim 1, wherein D comprises a monosaccharide or oligosaccharide chain of 2 to 12 α-1,2 and/or α-1,6 linked sugar moieties which are O-linked to carbon atoms on spacer group E.

9. A synthetic molecule as claimed in claim 8, wherein D comprises one or more monosaccharide or oligosaccharide chains of 2 to 6 sugar moieties.

Amended Sheet
IPEA/AU

17. A method of treating or preventing an inflammatory or immune cell-mediated disease or disorder comprising administering an effective amount of a compound of formula (I), as defined in claim 1, or a pharmaceutically acceptable salt thereof to a patient in need thereof.

18. A method as claimed in claim 17, which the patient is a human patient.

19. A method as claimed in claim 17 or 18, were the inflammatory or immune cell-mediated disease or disorder is asthma, allergic rhinitis, dermatitis, psoriasis, inflammatory bowel disease including Crohn's disease and ulcerative colitis, rheumatoid arthritis, multiple sclerosis, diabetes, systemic lupus erythmatosis and atherosclerosis.

20. A process for preparing synthetic molecules of formula (I), as defined in claim 1, comprising the steps:

(I) modification of a benzylated allyl glycoside compound to form an intermediate by dihydroxylation of the double bond using a catalytic amount of osmium tetraoxide and excess N-methyl morpholine-1-oxide to give a glycosyl glycerol as an intermediate for futher modification;

(II) selective benzoylation of the glycosyl glycerol intermediate to form a glycosyl glycerol unit with the 2° hydroxyl group protected as a benzoyl ester;

(III) glycosylation of the 1° hydroxyl group of the intermediate compound and selective removal of the benzoyl protecting group;

(IV) phosphorylation of the 1° or 2° hydroxyl groups of the intermediate compound;

(V) removal of the benzyl protecting groups to form a compound of formula (I).

21. A process as claimed in claim 20, wherein step (II) is carried out by temporary tritylation of the 1° hydroxyl group using trityl chloride and pyridine, addition of benzoyl chloride and acidic hydrolysis of the trityl group.

22. A process as claimed in claim 20, wherein step (III) is carried out by an N-iodosuccimide trifluoromethanesulfonate promoted glycosylation reaction with a perbenzylated glycosyl phosphite, or a trimethylsilyl trifluoromethaesulfonate promoted glycosylation reaction with a perbenzylated glycosyl trichloroimidate.

23. A process as claimed in claim 20, wherein step (IV) is carried out using:

(a) a 1,2-di-O-acyl-sn-glycero-3-H-phosphonate triethylammonium salt;

(b) *N,N*-diisopropyl 1,2-di-O-acyl-sn-glycero-3-phosphoramidite and subsequent oxidation with *m*-chloroperoxybenzoic acid; and

(c) *N,N*-diisopropyl alkylphosphoramidite and subsequent oxidation with *m*-chloroperoxybenzoic acid.

24. A process as claimed in claim 20, wherein step (V) is carried out by catalytic hydrogenolysis over palladium on carbon at either atmospheric or 300psi pressure of hydrogen.

25. A process for preparing synthetic molecules of formula (I) as defined in claim 1, comprising the steps

(I) glycoslation of a benzylated mono-acetylated diol followed by deacetylation;

(II) phosphorylation of the 1° or 2° hydroxyl groups of the compound of step (I);

(III) removal of the benzyl protecting groups to form a compound of formula (I).

26. A process as claimed in claim 25, wherein step (I) is carried out by an N-iodosuccimide trifluoromethanesulfonate promoted glycosylation reaction with a perbenzylated glycosyl phosphite, or a trimethylsilyl trifluoromethanesulfonate promoted glycosylation reaction with a perbenzylated glycosyl trichloroimidate.

27. A process as claimed in claim 25, wherein step (II) is carried out using:

(a) a 1,2-di-O-acyl-sn-glycero-3-H-phosphonate triethylammonium salt;

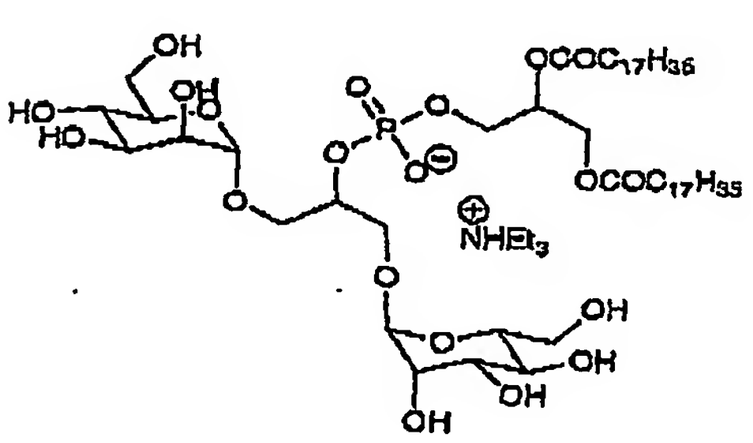
(b) *N,N*-diisopropyl 1,2-di-O-acyl-sn-glycero-3-phosphoramidite and subsequent oxidation with *m*-chloroperoxybenzoic acid; and

(c) *N,N*-diisopropyl alkylphosphoramidite and subsequent oxidation with *m*-chloroperoxybenzoic acid.

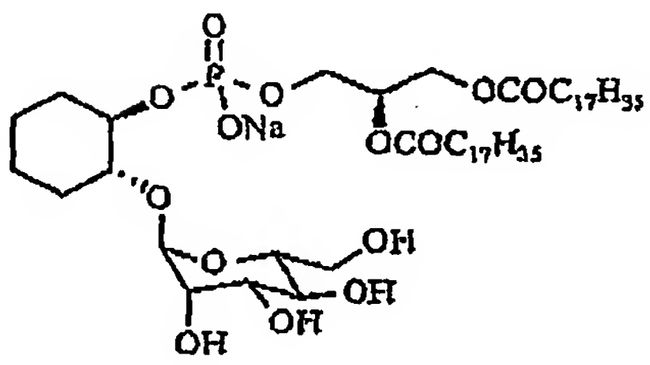
28. A process as claimed in claim 25, wherein step (III) is carried out by catalytic hydrogenolysis over palladium on carbon at either atmospheric or 300psi pressure of hydrogen.

29. A compound of formula (I), as defined in claim 1, prepared by the process of claim 20 or 25.

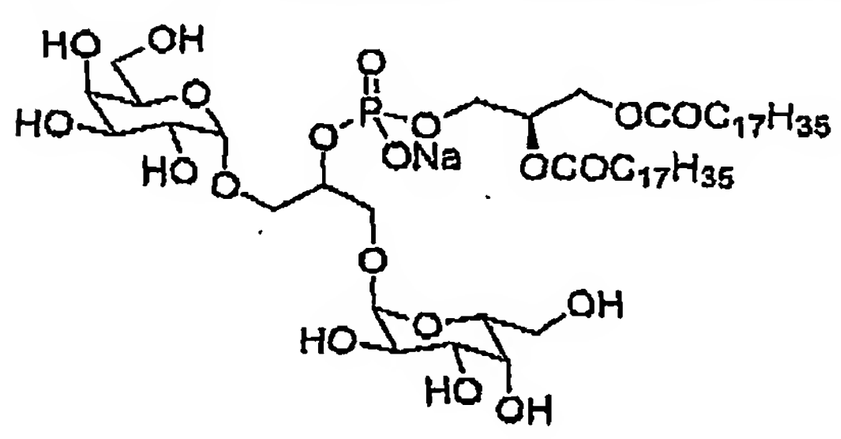
30. A compound of formula (I), as defined in claim 1, comprising



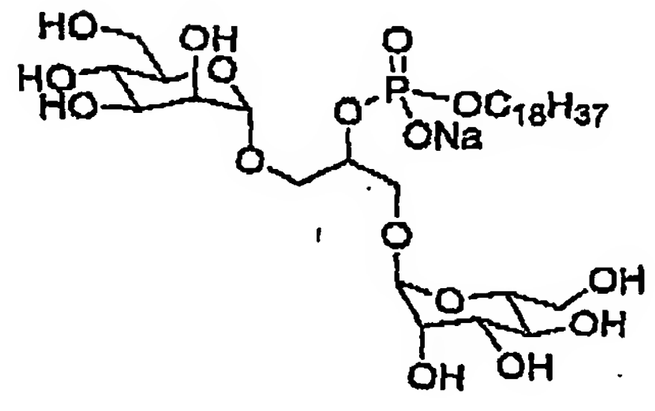
31. A compound of formula (I), as defined in claim 1, comprising



32. A compound of formula (I), as defined in claim 1, comprising



33. A compound of formula (I), as defined in claim 1, comprising



34. A compound of formula (I), as defined in claim 1, comprising